REMARKS

Claims 1-15 remain pending in the Application. Claims 1-7 stand rejected and claims 8 and 9 are allowed. Claims 10-15 were objected to for depending from rejected base claims. Claim 1 has been amended herein. Applicants submit that claims 1-15 are in condition for allowance and respectfully request reconsideration in view of the following remarks.

Claims Rejected Under 35 U.S.C. §103

Claims 1-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over German Patent Application DE 198 19 564 (Dietrich) in view of PCT Application WO 98/14715 (Shirai). In maintaining the rejections of claims 1-7, the Examiner alleges that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the wedge surfaces of [Shirai] in the invention of [Dietrich] in order to provide a self-servo effect without allowing for the self-servo effect to become excessively large." (final Office Action, item 2.) Applicants respectfully traverse and request reconsideration. Specifically, Applicants assert that the device of Shirai is different from the claimed structure and functions in a different manner, as set forth in the Amendment filed September 16, 2004.

In particular, claim 1, which is the only independent claim of this rejected group, is directed to an electro-mechanical brake wherein an electrical actuator displaces a wedge 12 in an actuation direction (x) and wherein:

> the wedge angle is constant on a first segment (18) of the wedge surface (14), which is effective at the start of brake actuation, and greater self boosting is provided by a second segment (20) which follows the first second (18), the wedge angle α on the second segment being smaller than on the first segment (emphasis added).

As set forth in the Amendment filed September 16, 2004, and admitted in the Office Action, Shirai teaches reducing the wedge angle on a second segment to prevent the self-boosting effect of an electro-mechanical brake from becoming excessively large. Accordingly, if Dietrich and Shirai were combined as suggested by the Examiner, then the resulting device would act to prevent the self-boosting effect of that device from becoming excessively large. This is in contrast to the claimed invention which provides greater self-boosting on a second segment which is smaller than a first segment.

In maintaining the rejection, the Examiner asserts that the device of Dietrich modified by Shirai would be structurally indifferent from the claimed invention, and would therefore function in the same manner. Applicant respectfully traverses. Specifically, Applicants point out that wedge 12 of the claimed invention is actuated in a direction (x) that is parallel to the surface of a brake disk (see Application at page 4, lines 16-22 and FIG. 1). Claim 1 has been amended to make this clear. Applicants further note that counter bearing 16, against which wedge 12 is actuated, is fixed with respect to the wedge (see Application at page 4, lines 23-25).

In contrast, Shirai is directed to a brake device wherein actuator 212 pushes a movable presser rod 216 in a direction that is perpendicular to the brake disc 11. The

presser rod acts on a wedge 20 to displace the wedge in a direction perpendicular to disc 11 until friction pad 18 mounted to wedge 20 comes in contact with the brake disc 11. When this occurs, brake disc 11 entrains friction pad 18/wedge 20 to move along a direction (y) that is parallel to the brake disc. There is no fixed counter bearing against which pad 18/wedge 20 is urged.

The structural differences between the claimed invention and the device of Shirai produce different results when the wedge angles are reduced. As set forth in the Application at page 8, line 5, the actuator force of the claimed invention F_A can be calculated from $F_A = (\tan\alpha - \mu)F_N$, wherein F_N is the normal force. It is known that the friction force $F_R = \mu F_N$ (see, e.g. Application at page 5, line 23, formula no. 1).

Substituting $F_N = \frac{F_A}{(\tan\alpha - \mu)}$ in the equation for friction force, it can be seen that the friction force $F_R = \frac{\mu F_A}{(\tan\alpha - \mu)}$. Accordingly, it can be seen that as wedge angle α decreases, friction force F_R becomes greater. This is the greater self-boosting that is recited in claim 1.

In the device of Shirai, the rotating brake disc 11 draws wedge 20 further between the brake disc 11 and presser rod 216 and the braking force steadily increases

with constant or increasing wedge angle α. The self-servo effect will try to move friction pad 18/wedge 20 as far as possible in the (y) direction, thus steadily increasing the effective braking force. Accordingly, the device of Shirai operates such that a smaller wedge angle α will result in less braking force than a larger wedge angle for the same amount of displacement along direction (y). This is the reduced servo-effect described in Shirai. It can be seen then, that the claimed invention is structurally and functionally different than the device of Shirai, and therefore different than the device of Dietrich modified by Shirai asserted in the Office Action. For at least these reasons, Applicants assert that the Office Action fails to present a *prima facie* case of obviousness.

In view of the foregoing amendments to the claims and remarks given herein, Applicants respectfully believe this case is in condition for allowance and respectfully request allowance of the pending claims. If the Examiner believes any detailed language of the claims requires further discussion, the Examiner is respectfully asked to telephone the undersigned attorney so that the matter may be promptly resolved. The Examiner's prompt attention to this matter is appreciated.

Applicants are of the opinion that an additional fee of $ 395.00 is due as a result of this amendment. Please apply this amount any additional charges or credits necessary to complete this communication to Deposit Account No. 23-3000.

Application No. 10/718,325
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Reply to Office Action of November 29, 2004

Respectfully submitted,

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